

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: GRASMUCK, Gilbert

SERIAL NO.: (International Serial No.PCT/FR2003/003030)

FILED: Herewith (International Filing Date: 15 October 2003)

TITLE: RESPIRATORY ASSISTANCE DEVICE

REMARKS ON PRELIMINARY AMENDMENT

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

In conjunction with the filing of the present application, and prior to an initial Official Action on this matter, please amend the above-identified application as provided in the attached Marked Up Copy and Substitute Specification.

Please note that the following amendments in the Substitute Specification apply to the attached specification and claims labeled for "U.S. filing". This combined application incorporates the original application and any amendments or annex to the International Application in the proper order, including the correct original and substitute pages, claims and drawing sheets.

In this preliminary amendment, please consider the following remarks in conjunction with the amendments to the above-identified application as follows:

REMARKS

The present Preliminary Amendment has been entered for the purpose of placing the application into a more proper U.S. format. In particular, certain grammatical and idiomatic inconsistencies have been corrected by amendment to the specification, and the application is

corrected for certain typographical errors found in the originally submitted application. No new matter has been added by these amendments. The present application incorporates the original filing including any amendments made in the international filing. There was no amendment in the International Application, and there is no annex to the International Preliminary Examination Report because there is no IPER. A demand for International Preliminary Examination was not filed. The specification is an English translation of an originally French language document.

The Claims have been amended so as to conform with U.S. requirements and so as to remove multiple dependent claims. The Abstract has been amended so as to conform to U.S. filing requirements.

Applicant respectfully requests that the present Amendment be entered prior to an initial Official Action on the present application.

Respectfully submitted,

4-13-06

Date

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CLAIMS

I claim:

1. (Currently amended) High-speed centrifugal ventilation device for assisting a patient's respiratory function, of the kind of device comprising:

a centrifugal ventilator housed inside a casing (3) and primarily composed comprised of:

at least one wheel (2) rotating at high a speed driven by a driver (1) and being equipped with a volute (4), and

channels (11, 12) for circulating a gaseous flux, these said channels being arranged inside the said casing (3) upstream and downstream of the ventilator, for the induction and discharge of this said gaseous flux through the openings of said casing (3) for intake (5) and expulsion (6) respectively, characterized by the fact that the said volute (4) is being integral part of the said casing (3) so as to form an integral fixed assembly; and

while a flexible means (7, 8) are intercalated between this the fixed assembly (3, 4) and the said driver (1) equipped with the wheel (2) which it drives, forming a dynamic assembly (1, 2) to prevent the transmission of vibrations generated by the latter (1, 2) said dynamic assembly towards the fixed assembly (3, 4).

2. (Currently amended) Device as per claim 1 characterized by the fact that, wherein the flexible intercalated means between the dynamic assembly (1, 2) and the fixed assembly (3, 4) are is comprised of at least one of the group of means comprising mechanical springs, flexible materials, or magnetic repulsion means.

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3. (Currently amended) Device as per claim 2 characterized by the fact that at least one, wherein said flexible element (7, 8) means is intercalated between the dynamic assembly (1, 2) and the fixed assembly (3, 4) for their connection to each other, with the dynamic assembly (1, 2) being supported in suspension by the fixed assembly (3, 4).

4. (Currently amended) Device as per claim 3 characterized by the fact that the, wherein said flexible means intercalated between the dynamic assembly (1, 2) and the fixed assembly (3, 4) comprise:

at least one first flexible element (7) intercalated between the said volute (4) and the dynamic assembly (1, 2), and

at least one second flexible element (8) intercalated between the driver (1), at least at its a base thereof, and the said casing (3).

5. (Currently amended) Device as per claim 4 characterized by the fact that the, wherein the first and second flexible intercalated elements (7, 8) constitute not only are comprised of:

connecting means between the fixed assembly (3, 4) and the dynamic assembly (1, 2), but also; and

positioning means for the latter (1, 2) dynamic assembly inside the said casing (3).

6. (Currently amended) Device as per claim 4 characterized by the fact that the, wherein the first and second flexible intercalated elements (7, 8) are made comprised of elastomer material, their characteristics of said material having a hardness, volume and conformation providing them the first and second flexible elements with resonance frequencies in the a range of 10 Hz to 300 Hz.

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7. (Currently amended) Device as per any of the preceding claims characterized by the fact that Claim 1, wherein said the circulation channels (11, 12) for gaseous flow inside the said casing (3) are lined with a mass (13, 14) of sound-absorbing material.

8. (Currently amended) Device as per any of the preceding claims characterized by the fact that Claim 1, wherein at least one channel, of the circulation said channels (11, 12) for circulating gaseous flow arranged inside the casing (3) upstream and downstream of the volute (4), is arranged around the driver (1) for the purpose of, cooling it said driver through the a passage of the gaseous flow in its proximity of said driver.

9. (Currently amended) Device as per any of the preceding claims characterized by the fact that Claim 1, wherein at least one channel, of the circulation said channels (11, 12) for circulating gaseous flow arranged inside the casing (3) upstream and downstream of the volute (4), is organized in the a form of a baffle.

10. (Currently amended) Device as per any of the preceding claims characterized by the fact that Claim 1, wherein at least one channel, of the circulation said channels (11, 12) for circulating gaseous flow upstream and downstream of the volute (4), is arranged inside the said casing (3) by partitioning the latter said casing with partitions, the said partitions (9, 10) being recessed and attached in its an inside space thereof through the an intermediary of an impervious material, forming a seal (15) against the passage of the acoustic waves.

11. (Currently amended) Device as per any of the preceding claims characterized by the fact that the material the Claim 1, wherein said at least one wheel (2) is made comprised of is a light material so as to provide it with for low inertia in rotation.

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12. (Currently amended) Device as per ~~any of the preceding claims~~ characterized by the fact that the Claim 1, wherein said at least one wheel (2) is equipped with a flange (16) ~~made comprised~~ of rigid low density foam, attached to the wheel by glueing.

13. (Currently amended) Device as per ~~any of the preceding claims~~ characterized by the fact that the Claim 1, wherein said driver (1) is equipped with sensors for detecting the angular position of ~~the~~ a rotor.

14. (Currently amended) Device as per ~~any of the claims 1 to 12~~, characterized by the fact that the Claim 1, wherein said driver (1) ~~being~~ is comprised of a synchronous motor with permanent magnets at ~~the~~ a rotor, without position sensors, its operation ~~is~~ thereof being put under the dependence of electronic means with vectorial control of ~~the~~ flow.

15. (Currently amended) Device as per ~~any of the preceding claims~~ characterized by the fact that it includes Claim 1, further comprising:

two intakes (17, 18) of gaseous flux circulation ~~that are~~, arranged in proximity of ~~the~~ an evacuation orifice (6) of the said casing (3), one of these said two intakes being intended to measure the fluid pressure at ~~the~~ an output of the said casing (3), the other intake in turn a remaining one of said two intakes being intended to permit the injection of oxygen to enrich ~~the~~ a gaseous mixture which is delivered to ~~the~~ a patient.

16. (Currently amended) Device as per claim 1 ~~and any of the preceding claims~~ characterized by the fact that, wherein each wheel (2) is equipped with a volute (4).

17. (Currently amended) Device as per claim 1 ~~and any of the claims 2 to 15~~ characterized by the fact that, wherein a single volute (4) covers several wheels.

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ABSTRACT OF THE DISCLOSURE

The invention relates to a high-speed centrifugal ventilation device for assisting a patient respiratory function. The inventive device comprises includes a centrifugal fan which is arranged in a casing box (3) and essentially consists of has a wheel (2) actuated by a driver (1). Said The wheel is provided with a volute (4) connected to the casing box (3) in such a way that an integral fixed assembly is formed, wherein elastic means (7, 8) are An elastic device is interposed between said the fixed assembly (3, 4) and the driver (1) provided with the wheel (2) which is driven thereby; thereby forming a. A dynamic assembly (1, 2) is formed for avoiding transmission of vibrations generated by the wheel and the driver (1, 2) towards the fixed assembly (3, 4).